

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A process for welding a Ti material and a Cu material comprising:

interposing a welding Cu material, including a tertiary metal as a component, between a Ti material and a Cu material;

said tertiary ~~material~~ metal being of a type which ~~performs one of the following:~~

(i) reduces a three-element eutectic temperature of the Ti, the Cu and said tertiary metal below a eutectic temperature of said Ti and the Cu; ~~and~~ or

(ii) ~~produces a reaction which causes a liquid phase~~ results in the formation of a liquid phase at a temperature that is lower than a two-element eutectic temperature between the Ti material and the Cu material;

heating said Ti material and the Cu material to ~~said~~ a temperature wherein solid and liquid coexist and lower than a two-element eutectic temperature of the Ti material and the Cu material; and

maintaining said temperature wherein solid and liquid coexist long enough to form a welding portion.

2. (Currently Amended) A welding process of a Ti material and a Cu material according to claim 1, wherein the step of heating includes heating in a non-oxidizing atmosphere ~~of one of~~ selected from a vacuum, an inert gas, ~~and~~ or a reducing gas.

3. (Original) A welding process of a Ti material and a Cu material according to claim 1, wherein said tertiary metal is Sn.

4. (Currently Amended) A welding process of a Ti material and a Cu material according to claim 3, where said temperature wherein solid and liquid coexist is from about 700° C to about 887° C.

5. (Original) A welding process of a Ti material and a Cu material according to claim 4, wherein a welding portion formed has Cu as a main body.

6. (Original) A welding process of a Ti material and a Cu material according to claim 5, wherein a welding portion formed includes at least 60 weight % Cu.

7. (Original) A welding process of a Ti material and a Cu material according to claim 1, wherein said welding Cu material is a foil or powder.

8. (Currently Amended) A welding process of a Ti material and a Cu material according to claim 1, wherein the welding Cu material is composed of a plating of said tertiary metal on a Cu foil.

Claims 9 - 12 (Canceled).

13. (Currently Amended) A process for forming a plate including:

interposing a tertiary metal between a Cu material and a Ti material;

said tertiary metal being of a type which results in the formation of a liquid phase at a temperature below ~~reacts with at least one of Cu and Ti to reduce a melting temperature below a temperature of an eutectic temperature of said Cu and Ti material;~~ and

holding said materials at ~~said~~ a temperature wherein solid and liquid coexist and lower than a two-element eutectic temperature of the Ti material and the Cu material for a time sufficient to obtain welding.

14. (Original) A welding process of a Ti material and a Cu material according to claim 6, wherein said welding Cu material is a foil or a powder.

15. (Original) A welding process of a Ti material and a Cu material according to claim 6, wherein the welding Cu material is composed of plating of said tertiary metal on a Cu foil.

16. (New) A welding process comprising
interposing a foil or powder between a Ti material and a Cu material, wherein the foil or powder comprises Sn,

heating the Ti material and the Cu material to a temperature wherein solid and liquid coexist and lower than a two-element eutectic temperature of the Ti material and the Cu material;
and

maintaining said temperature long enough to form a welding portion.

17. (New) The welding process of claim 16, wherein the heating occurs in a vacuum, in the presence of an inert gas, or in the presence of a reducing gas.

18. (New) The welding process of claim 16, wherein the foil further comprises Cu.

19. (New) The welding process of claim 16, wherein the powder is interposed between a Ti plate and a Cu foil.

20. (New) The welding process of claim 16, wherein the powder is interposed between a Ti plate and a Cu plate.